REMARKS

In the Office Action mailed March 26, 2004 the Examiner noted that claims 1-19 were pending, and rejected claims 1-19. Claims 1, 13-15 and 19 have been amended, new claims 20-25 have been added and, thus, in view of the forgoing claims 1-25 remain pending for reconsideration which is requested. No new matter has been added. The Examiner's rejections are traversed below.

On page 2 of the Office Action, the Examiner rejected all claims under 35 U.S.C. § 102 as anticipated by Naudus.

Naudus is directed to a system that routes delay sensitive information from a source to a destination over a network of multiple connected nodes, such as the Internet, based on the delay sensitivity of the information. The delay sensitive information is sent over high cost node connections and the delay insensitive information is sent over lower cost connections. As stated by Naudus:

> The present invention relates to control signaling and data transfer in a computer network. More specifically, it relates to a method and apparatus for sending delay sensitive information on a higher cost network connection while sending non-delay sensitive control and status information on a lower cost network connection.

(See Naudus, col. 1, lines 7-12)

> A method and apparatus for sending delay sensitive information assisted by packet switched networks for network nodes in a computer network. Delay sensitive information such as voice information is sent over higher cost delay sensitive connections. Control and status information for the delay sensitive connections is sent in control messages over lower cost packet switched connections to the nodes in the computer network. Information in the control messages is stored in status tables on the network nodes. The status table is used by network nodes to determine the status of any delay sensitive connections in the computer network and is used to establish a lowest cost connection path or a desired quality of service connection path when a delay sensitive connection between network nodes is requested. Sending delay sensitive control and status information over the lower cost packet switch connections to the network nodes and using status tables on the network nodes to establish delay sensitive connections significantly decreases the costs associated with using delay sensitive connections.

(See Naudus, Abstract)

In the Action, the Examiner points to particular portions of Naudus for the features of the present invention. These portions state:

> Devices in a network are typically connected with circuit switched, message switched, and packet switched connections. A circuit switched connection is a dedicated communications circuit between two devices. The communications

circuit may be a physical or a virtual circuit connection. A message switched connection establishes a non-dedicated message route when a unit of information is sent. Different units of information may travel over different routes in a message switched connection. A packet switched connection divides original information into multiple packets on the transmitting end, transmits the packets separately, and re-assembles the packets into the original information on the receiving end. The transmission route may be dedicated (e.g., virtual circuit) or non-dedicated (e.g., datagram) in a packet switched connection.

Additional devices are typically required to make connections between dissimilar network topologies. For example, repeaters, bridges, gateways and routers are used to connect networks with different topologies. Repeaters copy individual bits between network topologies. Bridges store and forward data frames between network topologies. Gateways store and forward data packets between dissimilar network topologies. Routers translate differences between network protocols and route data packets to the appropriate device on a network topology.

(See Naudus, col. 1, lines 22-47)

Selected network nodes (12, 14) have an optional dedicated direct connection 26 which may be circuit switched, message switched, or packet switched. The network nodes may optionally be connected to other networks such as a LAN, a Private Branch eXchange ("PBX"), an intranet, or connected to other devices such as bridges, routers and gateways (not shown in FIG. 1). The network nodes (12, 14, 16) may be local or remote to each other.

FIG. 2 is a flow diagram illustrating a method 28 for determining the status of a delay sensitive connection from any network node (12, 14, 16) in computer network 10. At step 30, a selection input is received on a first network node to change the status of a delay sensitive connection between the first network node and a second network node (e.g., a request to make a delay sensitive connection). Status of the delay sensitive connection is changed based on the selection input at step 32 (e.g., a delay sensitive connection is established, and an individual channel is chosen). A control message with a predetermined protocol is sent on the packet switched network from the first network node over the packet switched connection to the other network nodes in the computer network indicating the change in status of the delay sensitive connection at step 34. The control message may be a single broadcast control message sent to each of network nodes, or multiple individual control messages sent to each of the network nodes.

The nodes (12, 14, 16) in computer network 10 store control status information in a status table that is dynamically updated as the nodes receive control messages. However, other data structures could also be used to store delay sensitive connection status information. The protocol, control messages and status table will be explained below.

(See Naudus, col. 5, line 42-col. 6, line 6)

Method 28 allows any node in computer network 10 to determine the availability of delay sensitive connection channels on remote nodes and chose a connection that generates a least cost connection path (e.g., an indirect multi-hop delay sensitive connection instead of a direct delay sensitive connection) along with a requested quality of service. The least cost connection path may also be a shortest path connection or a least cost connection with a desired QoS. The control messages contain routing information, and other cost information to allow a network node to determine the least cost connection path alternative. The control messages are sent over the packet switched network instead of the delay

sensitive network saving additional costs.

(See Naudus, col. 6, lines 16-28)

FIG. 4 is a flow diagram illustrating a method 58 for using control information to determine a lowest cost connection path. At step 60, a selection input is received on a node in the computer network requesting a delay sensitive connection to another node. Information in the status table on the node is used at step 62 to determine the lowest cost path along with a desired quality of service to complete the delay sensitive connection request. QoS includes a smaller delay (e.g., a non-routed link) or a higher quality transmission channel.

The determination at step 62 includes determining general preference information for handling the request, the cost information between nodes, and the QoS. For example, the preference may be to always check for the availability of a delay sensitive channel with a first desired QoS on a designated network node first, as the designated node typically will have one or more delay sensitive connections already established with available delay sensitive channels.

The cost information and QoS is used to determine if indirect multi-hop connections can be used instead of direct single hop connections (e.g., multi-hop local connections instead of one direct long distance connection). The cost information can also be used to determine a shortest path connection route. An exemplary status table is shown in Table 2 for the network nodes from FIGS. 3A and 3B. However, other layouts could also be used for the status table with more or fewer table columns. For example, the status table may include network addresses of other nodes in computer network 10, direct dial phone numbers for network nodes, or phone numbers for a PBX attached to network nodes in computer network 10.

TABLE 2

Delay Sensitive Node	Available Delay Sensitive Channels	Node Connections	Preferred Paths	Connect Costs
A	2	B,C	B:B	B $1.00
QoS: 1,2			A:A	C $1.00
B	2	A	A:A	A $1.00
QoS: 1,2			C:A-C	C $14.00
A-C $2.00				
C	3	A	A:A	A $1.00
QoS: 1,2,3			B:A-B	B $14.00
A-B $2.00				

Returning to FIG. 4, the lowest cost, delay sensitive connection path is established using information from the status table at step 64. This connection path is typically an indirect, multi-hop path through multiple network nodes. However, the connection can also be a direct, single-hop path if this is the lowest cost path (e.g., no other delay sensitive connections have been previously made to the desired network node). The lowest cost connection path can also be a shortest connection path, or a desired QoS path.

(See Naudus, col. 8, lines 5-58)

The present invention may offer several advantages over the prior art. It distributes status information for delay sensitive connections to nodes in a computer network via control messages. The control messages are sent via a lower cost packet switched connection instead of the higher cost delay sensitive connection. Network nodes use the information in the control messages to determine and establish a least cost path when it is necessary to make a delay

> sensitive connection. The least cost path may be an indirect path utilizing idle channels on existing delay sensitive connections between selected network nodes. The network nodes also monitor their own delay sensitive connections and terminate the connections when all channels in the connection are idle for a specified period of time. The present invention significantly lowers the operating costs of a computer network since the higher cost delay sensitive connections are used in an optimal manner.

(See Naudus, col. 10, lines 22-39)

As can be seen from the about Naudus text, Naudus says nothing about routing information, such a video streaming data, from a source to multiple destinations over a network of multiple connected nodes, such as the Internet.

In contrast, the present invention is directed to routing data, such a video multicast (broadcast) streaming data, from a source to multiple destinations or "a plurality of clients" over a network of multiple connected nodes, such as the Internet. In doing so the present invention collects ("collecting") information about and determines the "communication cost" of each of the node connections and determines or generates "route distribution information" to route the data from the source to the multiple destinations "based on ... the communications cost". Naudus says nothing about such a system.

The network associated with the present invention also includes "redistribution servers". Routing over the network through the redistribution servers is also determined based on cost. In addition, each of the redistribution servers can produce one or more copies ("copy") of the source data and send the copies (or "branch" the data signal) toward different destinations or "clients" taking into account the cost. Naudus says nothing about such a system.

These features are emphasized in independent claims 1, 13-15 and 19.

It is submitted that the present claimed invention patentably distinguishes over Naudus and withdrawal of the rejection is requested.

The dependent claims depend from the above-discussed independent claims and are patentable over the prior art for the reasons discussed above. The dependent claims also recite additional features not taught or suggested by the prior art. For example, claim 4 emphasizes routing based on groups of nodes. Nothing in Naudus discusses this. It is submitted that the dependent claims are independently patentable over the prior art.

New claims 20-25 emphasize the routing based on cost to multiple destinations as discussed above and along with, in certain claims, the use of redistribution servers to branch the

multicast data. Nothing in the prior art teaches or suggests such. It is submitted that these new claims distinguishes over the prior art.

It is submitted that the claims are not taught, disclosed or suggested by the prior art. The claims are therefore in a condition suitable for allowance. An early Notice of Allowance is requested.

If any further fees, other than and except for the issue fee, are necessary with respect to this paper, the U.S.P.T.O. is requested to obtain the same from deposit account number 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: 7/26/4

By: _____
J. Randall Beckers
Registration No. 30,358

1201 New York Avenue, NW, Suite 700
Washington, D.C. 20005
Telephone: (202) 434-1500
Facsimile: (202) 434-1501